UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,175	10/22/2003	Nitzan Peleg	200308559-1	6513

22879 7590 05/12/2009

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
BLACK, LINH	

ART UNIT	PAPER NUMBER
2159	

NOTIFICATION DATE	DELIVERY MODE
05/12/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM
ipa.mail@hp.com
jessica.l.fusek@hp.com

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/691,175
Filing Date: October 22, 2003
Appellant(s): PELEG ET AL.

Karen G. Hazzah
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/19/2009 appealing from the Office action mailed 10/7/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,289,335 - Downing et al. – 9-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-16, and 18-21 rejected under 35 U.S.C. 102(b) as being anticipated by Downing et al. (US 6289335).

In the specification, line 4 of paragraph 47, Applicant discloses "one range is contained entirely within another range". In this scenario, two ranges are actually just one range or equivalent to just a new set of modified rows in the refresh log or one range in the refresh log. In addition, there is no limitation in claim 1 discloses that the "first range" and the "second range" are different ranges.

As per claims 1, 5, 10, 14, 19, Downing et al. teach

a materialized view stored on the memory, the materialized view being derived at least in part from a table – col. 6, lines 54-63 (master logs support subquery snapshots and record the primary key values, the filter values, and information about the modification for each row that is inserted, deleted, or modified in a corresponding master table. Master logs can be implemented as a buffer in main memory, or preferably in a persistent storage such as a file on a hard disk); col. 9, last paragraph (In the technological art, a materialized view is also known as a snapshot where its data can be inserted, updated, deleted).

a logging mechanism stored on the memory, the logging mechanism configured to maintain that maintains a refresh log; the refresh log containing a first range and a second range that at least partially overlap, the first range and the second range each having a timestamp associated therewith – col. 3, lines 49 to col. 4, line 9 (each master table has a primary key, the value of which is recorded into a master log in response to detecting a modification to the master table. In response to initiation of a refresh operation, differences between the snapshot and the master tables are reconciled based on the master log); fig. 12 (depicts exemplary snapshots and master log used to illustrate the operation of a fast refresh operation in which row #3 is logged as deleted from the old order_line snapshot and row #8 is logged as inserted into the new order_line snapshot. Each snapshot has a different range of rows which also has an overlapped row #6. Order_line log contains changes to reconcile the differences between these snapshots and the master table: order_line thus, the master log

contains overlapped changes of rows; the overlapped or conflicts between modified rows can happen as described in the cited col. 17, line 45 to col. 18, line 15 of the next limitation); col. 8, lines 45-63 (Accordingly, a refresh timestamp is maintained for each snapshot at the master site. The refresh timestamp for a snapshot indicates the time at which the snapshot was last released. Moreover, each entry in the master logs contains a field for a refresh timestamp, TIME$$. When the entry is first added to a master log, a default value for the timestamp is placed in the TIME$$ field. When the entry is first used in a refresh operation, the default value is changed to reflect the time of the refresh operation).

wherein the timestamp associated with each of the first range and second range respectively indicates when an operation corresponding to the first range and the second range occurred to the table - col. 1, 1st par; col. 9, last par; col. 17, line 45 to col. 18, line 15 (it is possible that not all of the modifications to the snapshot resulted in entries in the master logs due, for example, to the way a conflict was resolved with asynchronous replication... purges all log entries from the master log older than the timestamp of next most recently refreshed snapshot. The refresh time for the current refreshing snapshot is updated a the master site...the union can filter out duplicate insertions or deletions..." Therefore, resolving conflicts in the master log regarding duplicate insertion/deletions etc...is equivalent to resolve conflicts between "overlapped" rows. Since Appellant's definition of "range" as specified above is broad,

Downing et al.'s teachings seem disclose all limitations required in the independent claim 1).

a refresh manager stored on the memory, the refresh manager configured to resolve conflicts between the first range and the second range that at least partially overlap by selecting portions of the first range and the second range that have the more recent timestamp; and applying the selected portions of the first range and the second range to the materialized view – col. 3, line 49 to col. 4, line 9; col. 6, lines 25-63 (information about modifications to master tables appropriate for sub-query snapshots is logged in master table logs. Second, the appropriate administrative information is stored in the snapshot itself. Finally, the fast refresh method reconciles the differences between the master tables and the sub-query snapshot based on the information in the master table logs, master tables, and the snapshot itself…master logs support subquery snapshots and record the primary key values, the filter values, and information about the modification for each row that is inserted, deleted, or modified in a corresponding master table. Master logs can be implemented as a buffer in main memory, or preferably in a persistent storage such as a file on a hard disk); col. 8, lines 45-63; col. 9, last par. to col. 10, 1st paragraph. Wherein a refresh manager is required (though not explicitly called a "refresh manager") in order to do the reconciliation as taught by Downing, since it resolves conflicts as claimed.

As per claims 2-3, 6-7, 11-12, 15-16, 20-21, Downing et al. teach wherein the refresh log comprises a plurality of entries, each of the entries comprising an epoch identifier –

figs. 5a-c, field: OID; col. 8, lines 45-64 (The refresh timestamp for a snapshot indicates the time at which the snapshot was last refreshed; TIME$$ field).

As per claims 4, 9, 13, 18, 20, Downing et al. teach
wherein a plurality of materialized views are derived at least in part from the table – col. 9, last par.

Allowable Subject Matter

Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 7/9/08 have been fully considered but they are not persuasive. Regarding the Applicant's argument on page 11, 2nd paragraph that Downing fails to disclose timestamps associated with ranges...Examiner finds the limitation range is broad. Examiner interprets the refresh range is the refresh period in which the prior art discloses this feature at col. 1, 1st paragraph; col. 9, last paragraph. Regarding that the prior art fails to disclose anything related to performing conflict resolution..., Examiner disagrees. The prior art disclose the wrap up process to purge entries the master logs that are no longer needed...periodically pruned..., resolving conflicts - col. 17, line 45 to col. 18, line 15.

Regarding the Applicants' argument that the applied reference clearly is not refreshing the materialized view based on a comparison of the timestamps…Examiner disagrees. The prior art disclose the refresh operation of materialized views may be periodically generated …after a prescribed amount of time - col. 9, last paragraph. Thus, at least a time stamp is checked or/and compare for the refreshing operations.

Regarding the Applicant's argument of the limitation epoch number, the specification, paragraph 32 discloses that "the epoch number may be used to identify a group of rows or records that have been added to the IUD log since a refresh operation was performed..." Figs. 13a-c depict a series of states of a fast refreshed snapshot.

(10) Response to Argument

Argument 1a: "Downing does not teach "logging mechanism configured to maintain a refresh log...containing a first range and a second range that at least partially overlap"", page 6.

In response to the Appellants' above argument, Examiner disagrees. In the specification, line 4 of paragraph 47, Applicant discloses "one range is contained entirely within another range". In this scenario, two ranges are actually just one range or equivalent to just a new set of modified rows in the refresh log or one range in the refresh log. In addition, there is no limitation in claim 1 discloses that the "first range" and the "second range" are different ranges. Although the claims are interpreted in

light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). A materialized view is also known as a snapshot where its data can be inserted, updated, deleted.

Downing in col. 3, line 49 to col. 4, line 9 discloses "each master table has a primary key, the value of which is recorded into a master log in response to detecting a modification to the master table. In response to initiation of a refresh operation, differences between the snapshot and the master tables are reconciled based on the master log." Downing suggests the master log: "A log file (referred to as a "master log") can be employed to track and record the rows that have been updated in the master table. When a snapshot is refreshed, only the appropriate rows in the master log need to be applied to the snapshot table. In a networked environment, only those modified rows found at the master site are transferred across the network and updated or inserted into the snapshot. Rows deleted in the master table are also deleted in the snapshot. Fast refresh is typically faster, more efficient, and involves less network traffic than a complete refresh." – col. 1, lines 29-43.

Downing discloses "... Accordingly, a refresh timestamp is maintained for each snapshot at the master site. The refresh timestamp for a snapshot indicates the time at which the snapshot was last released. Moreover, each entry in the master logs contains a field for a refresh timestamp, TIME$$. When the entry is first added to a master log, a default value for the timestamp is placed in the TIME$$ field. When the entry is first used in a refresh operation, the default value is changed to reflect the time

of the refresh operation" - col. 8, lines 45-63. Fig. 12 depicts exemplary snapshots and master log used to illustrate the operation of a fast refresh operation in which row #3 is logged as deleted from the old order_line snapshot and row #8 is logged as inserted into the new order_line snapshot. Each snapshot has a different range of rows which also has an overlapped row #6. Order_line log contains changes to reconcile the differences between these snapshots and the master table: order_line thus, the master log can contain overlapped changes of rows; the overlapped or conflicts between modified rows can happen as described below.

As cited in col. 17, line 45 to col. 18, line 15, Downing discloses "it is possible that not all of the modifications to the snapshot resulted in entries in the master logs due, for example, to the way a conflict was resolved with asynchronous replication... purges all log entries from the master log older than the timestamp of next most recently refreshed snapshot. The refresh time for the current refreshing snapshot is updated a the master site...the union can filter out duplicate insertions or deletions..." Therefore, resolving conflicts in the master log regarding duplicate insertion/deletions etc...is equivalent to resolve conflicts between "overlapped" rows. Since Appellant's definition of "range" as specified above is broad, Downing et al.'s teachings seem disclose all limitations required in the independent claim 1.

Argument 1b: "Downing et al. does not teach "a refresh log...containing a first range and a second range that at least partially overlap...each having a

timestamp...respectively indicates when an operation corresponding to the first range and the second range occurred to the table", pages 7-9.

In response to the Appellants' above argument, Examiner disagrees. As specified above, in the specification, line 4 of paragraph 47, Applicant discloses "one range is contained entirely within another range". In this scenario, two ranges are actually just one range or equivalent to just a new set of modified rows in the refresh log.

Downing in col. 3, line 49 to col. 4, line 9 discloses "each master table has a primary key, the value of which is recorded into a master log in response to detecting a modification to the master table. In response to initiation of a refresh operation, differences between the snapshot and the master tables are reconciled based on the master log." Downing suggests the master log: "A log file (referred to as a "master log") can be employed to track and record the rows that have been updated in the master table. When a snapshot is refreshed, only the appropriate rows in the master log need to be applied to the snapshot table. In a networked environment, only those modified rows found at the master site are transferred across the network and updated or inserted into the snapshot. Rows deleted in the master table are also deleted in the snapshot. Fast refresh is typically faster, more efficient, and involves less network traffic than a complete refresh." – col. 1, lines 29-43.

Downing discloses "... Accordingly, a refresh timestamp is maintained for each snapshot at the master site. The refresh timestamp for a snapshot indicates the time at which the snapshot was last released. Moreover, each entry in the master logs

contains a field for a refresh timestamp, TIME$$. When the entry is first added to a master log, a default value for the timestamp is placed in the TIME$$ field. When the entry is first used in a refresh operation, the default value is changed to reflect the time of the refresh operation" - col. 8, lines 45-63. Fig. 12 depicts exemplary snapshots and master log used to illustrate the operation of a fast refresh operation in which row #3 is logged as deleted from the old order_line snapshot and row #8 is logged as inserted into the new order_line snapshot. Each snapshot has a different range of rows which also has an overlapped row #6. Order_line log contains changes to reconcile the differences between these snapshots and the master table: order_line thus, the master log can contain overlapped changes of rows, the overlapped or conflicts between modified rows in the master log can happen as described below.

As cited in col. 17, line 45 to col. 18, line 15, Downing discloses "it is possible that not all of the modifications to the snapshot resulted in entries in the master logs due, for example, to the way a conflict was resolved with asynchronous replication... purges all log entries from the master log older than the timestamp of next most recently refreshed snapshot. The refresh time for the current refreshing snapshot is updated a the master site...the union can filter out duplicate insertions or deletions..." Therefore, resolving conflicts in the master log regarding duplicate insertion/deletions etc...is equivalent to resolve conflicts between "overlapped" rows. Since Appellant's definition of "range" as specified above is broad, Downing et al.'s teachings seem disclose all limitations required in the independent claim 1.

Argument 2: "Independent claim 5...does not disclose...a "logging mechanism configured to maintain a refresh log, the refresh log containing a range and a single-row entry, the range and the single row entry each having a timestamp associated therewith..."", pages 9-10.

In response to the Appellants' above argument, Examiner disagrees. In the specification, line 4 of paragraph 47, Applicant discloses "one range is contained entirely within another range". In this scenario, two ranges or one range and a row are actually just one range or equivalent to just a new set of modified rows in the refresh log or one range in the refresh log. In addition, there is no limitation in claim 5 discloses that the "first range" and the "second range" are different ranges. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Downing in col. 3, line 49 to col. 4, line 9 discloses "each master table has a primary key, the value of which is recorded into a master log in response to detecting a modification to the master table. In response to initiation of a refresh operation, differences between the snapshot and the master tables are reconciled based on the master log." Thus, a refresh/master log is maintained. Downing suggests the master log: "A log file (referred to as a "master log") can be employed to track and record the rows that have been updated in the master table. When a snapshot is refreshed, only the appropriate rows in the master log need to be applied to the snapshot table. In a

networked environment, only those modified rows found at the master site are transferred across the network and updated or inserted into the snapshot. Rows deleted in the master table are also deleted in the snapshot. Fast refresh is typically faster, more efficient, and involves less network traffic than a complete refresh." – col. 1, lines 29-43.

Downing discloses "... Accordingly, a refresh timestamp is maintained for each snapshot at the master site. The refresh timestamp for a snapshot indicates the time at which the snapshot was last released. Moreover, each entry in the master logs contains a field for a refresh timestamp, TIME$$. When the entry is first added to a master log, a default value for the timestamp is placed in the TIME$$ field. When the entry is first used in a refresh operation, the default value is changed to reflect the time of the refresh operation" - col. 8, lines 45-63. Fig. 12 depicts exemplary snapshots and master log used to illustrate the operation of a fast refresh operation in which row #3 is logged as deleted from the old order_line snapshot and row #8 is logged as inserted into the new order_line snapshot and at a new refresh, the single row entry of row #8 will be also inserted into the master table: order_line. Each snapshot has a different range of rows which also has an overlapped row #6. Order_line log contains changes to reconcile the differences between these snapshots and the master table: order_line.

As cited in col. 17, line 45 to col. 18, line 15, Downing discloses "it is possible that not all of the modifications to the snapshot resulted in entries in the master logs due, for example, to the way a conflict was resolved with asynchronous replication... purges all log entries from the master log older than the timestamp of next most

recently refreshed snapshot. The refresh time for the current refreshing snapshot is updated a the master site...the union can filter out duplicate insertions or deletions..." Therefore, resolving conflicts in the master log regarding duplicate insertion/deletions etc...is equivalent to resolve conflicts between "overlapped" rows. Since Appellant's definition of "range" as specified above is broad, Downing et al.'s teachings seem disclose limitations required in the independent claim 5.

Argument 3: "Independent claim 10...Downing et al. does not teach ..."associating a timestamp with the first range and the second range in the refresh log such that the time stamp associated with the first range indicates when an operation corresponding to the first range occurred to the table and the time stamp associated with the second range indicates when an operation corresponding to the second range occurred in the table"", pages 11-12.

In response to the Appellants' above argument, Examiner disagrees. In the specification, line 4 of paragraph 47, Applicant discloses "one range is contained entirely within another range". In this scenario, two ranges are actually just one range or equivalent to just a new set of modified rows in the refresh log or one range in the refresh log. In addition, there is no limitation in claim 5 discloses that the "first range" and the "second range" are different ranges. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Downing in col. 3, line 49 to col. 4, line 9 discloses "each master table has a primary key, the value of which is recorded into a master log in response to detecting a modification to the master table. In response to initiation of a refresh operation, differences between the snapshot and the master tables are reconciled based on the master log." Thus, a refresh/master log is maintained. Downing suggests the master log: "A log file (referred to as a "master log") can be employed to track and record the rows that have been updated in the master table. When a snapshot is refreshed, only the appropriate rows in the master log need to be applied to the snapshot table. In a networked environment, only those modified rows found at the master site are transferred across the network and updated or inserted into the snapshot. Rows deleted in the master table are also deleted in the snapshot. Fast refresh is typically faster, more efficient, and involves less network traffic than a complete refresh." – col. 1, lines 29-43.

Downing discloses "... Accordingly, a refresh timestamp is maintained for each snapshot at the master site. The refresh timestamp for a snapshot indicates the time at which the snapshot was last released. Moreover, each entry in the master logs contains a field for a refresh timestamp, TIME$$. When the entry is first added to a master log, a default value for the timestamp is placed in the TIME$$ field. When the entry is first used in a refresh operation, the default value is changed to reflect the time of the refresh operation" - col. 8, lines 45-63. Fig. 12 depicts exemplary snapshots and master log used to illustrate the operation of a fast refresh operation in which row #3 is logged as deleted from the old order_line snapshot and row #8 is logged as inserted

into the new order_line snapshot and at a new refresh, the single row entry of row #8 will be also inserted into the master table: order_line. Each snapshot has a different range of rows which also has an overlapped row #6. Order_line log contains changes to reconcile the differences between these snapshots and the master table: order_line.

As cited in col. 17, line 45 to col. 18, line 15, Downing discloses "it is possible that not all of the modifications to the snapshot resulted in entries in the master logs due, for example, to the way a conflict was resolved with asynchronous replication… purges all log entries from the master log older than the timestamp of next most recently refreshed snapshot. The refresh time for the current refreshing snapshot is updated a the master site…the union can filter out duplicate insertions or deletions..." Therefore, resolving conflicts in the master log regarding duplicate insertion/deletions etc…is equivalent to resolve conflicts between "overlapped" rows. Since Appellant's definition of "range" as specified above is broad, Downing et al.'s teachings seem disclose limitations required in the independent claim 10.

Argument 4: "Independent claim 14…Downing et al. does not disclose…"storing a range a single row entry in a refresh log, the range and the single-row entry each having a timestamp associated therewith, wherein the timestamp associated with the range indicates when an operation corresponding to the range occurred to the table and the time stamp associated with the single-row entry indicates when an operation corresponding to the single row entry occurred to the table"", pages 13-14.

In response to the Appellants' above argument, Examiner disagrees. In the specification, line 4 of paragraph 47, Applicant discloses "one range is contained entirely within another range". In this scenario, two ranges or one range and a row are actually just one range or equivalent to just a new set of modified rows in the refresh log or one range in the refresh log. In addition, there is no limitation in claim 5 discloses that the "first range" and the "second range" are different ranges. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Downing in col. 3, line 49 to col. 4, line 9 discloses "each master table has a primary key, the value of which is recorded into a master log in response to detecting a modification to the master table. In response to initiation of a refresh operation, differences between the snapshot and the master tables are reconciled based on the master log." Thus, a refresh/master log is maintained. Downing suggests the master log: "A log file (referred to as a "master log") can be employed to track and record the rows that have been updated in the master table. When a snapshot is refreshed, only the appropriate rows in the master log need to be applied to the snapshot table. In a networked environment, only those modified rows found at the master site are transferred across the network and updated or inserted into the snapshot. Rows deleted in the master table are also deleted in the snapshot. Fast refresh is typically faster, more efficient, and involves less network traffic than a complete refresh." – col. 1, lines 29-43.

Downing discloses "... Accordingly, a refresh timestamp is maintained for each snapshot at the master site. The refresh timestamp for a snapshot indicates the time at which the snapshot was last released. Moreover, each entry in the master logs contains a field for a refresh timestamp, TIME$$. When the entry is first added to a master log, a default value for the timestamp is placed in the TIME$$ field. When the entry is first used in a refresh operation, the default value is changed to reflect the time of the refresh operation" - col. 8, lines 45-63. Fig. 12 depicts exemplary snapshots and master log used to illustrate the operation of a fast refresh operation in which row #3 is logged as deleted from the old order_line snapshot and row #8 is logged as inserted into the new order_line snapshot and at a new refresh, the single row entry of row #8 will be also inserted into the master table: order_line. Each snapshot has a different range of rows which also has an overlapped row #6. Order_line log contains changes to reconcile the differences between these snapshots and the master table: order_line.

As cited in col. 17, line 45 to col. 18, line 15, Downing discloses "it is possible that not all of the modifications to the snapshot resulted in entries in the master logs due, for example, to the way a conflict was resolved with asynchronous replication... purges all log entries from the master log older than the timestamp of next most recently refreshed snapshot. The refresh time for the current refreshing snapshot is updated a the master site...the union can filter out duplicate insertions or deletions..." Therefore, resolving conflicts in the master log regarding duplicate insertion/deletions etc...is equivalent to resolve conflicts between "overlapped" rows. Since Appellant's

definition of "range" as specified above is broad, Downing et al.'s teachings seem disclose limitations required in the independent claim 14.

Argument 5: "Independent claim 19... Downing et al. does not disclose..."the first range and the second range each having a timestamp associated therewith; wherein the timestamp associated with each of the first range and second range respectively indicates when ....table"", pages 14-15.

In response to the Appellants' above argument, Examiner disagrees. In the specification, line 4 of paragraph 47, Applicant discloses "one range is contained entirely within another range". In this scenario, two ranges are actually just one range or equivalent to just a new set of modified rows in the refresh log or one range in the refresh log. In addition, there is no limitation in claim 1 discloses that the "first range" and the "second range" are different ranges. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). A materialized view is also known as a snapshot where its data can be inserted, updated, deleted.

Downing in col. 3, line 49 to col. 4, line 9 discloses "each master table has a primary key, the value of which is recorded into a master log in response to detecting a modification to the master table. In response to initiation of a refresh operation, differences between the snapshot and the master tables are reconciled based on the master log." Downing suggests the master log: "A log file (referred to as a "master

log") can be employed to track and record the rows that have been updated in the master table. When a snapshot is refreshed, only the appropriate rows in the master log need to be applied to the snapshot table. In a networked environment, only those modified rows found at the master site are transferred across the network and updated or inserted into the snapshot. Rows deleted in the master table are also deleted in the snapshot. Fast refresh is typically faster, more efficient, and involves less network traffic than a complete refresh." – col. 1, lines 29-43.

Downing discloses "... Accordingly, a refresh timestamp is maintained for each snapshot at the master site. The refresh timestamp for a snapshot indicates the time at which the snapshot was last released. Moreover, each entry in the master logs contains a field for a refresh timestamp, TIME$$. When the entry is first added to a master log, a default value for the timestamp is placed in the TIME$$ field. When the entry is first used in a refresh operation, the default value is changed to reflect the time of the refresh operation" - col. 8, lines 45-63. Fig. 12 depicts exemplary snapshots and master log used to illustrate the operation of a fast refresh operation in which row #3 is logged as deleted from the old order_line snapshot and row #8 is logged as inserted into the new order_line snapshot. Each snapshot has a different range of rows which also has an overlapped row #6. Order_line log contains changes to reconcile the differences between these snapshots and the master table: order_line thus, the master log can contain overlapped changes of rows; the overlapped or conflicts between modified rows can happen as described below.

As cited in col. 17, line 45 to col. 18, line 15, Downing discloses "it is possible that not all of the modifications to the snapshot resulted in entries in the master logs due, for example, to the way a conflict was resolved with asynchronous replication... purges all log entries from the master log older than the timestamp of next most recently refreshed snapshot. The refresh time for the current refreshing snapshot is updated a the master site...the union can filter out duplicate insertions or deletions..." Therefore, resolving conflicts in the master log regarding duplicate insertion/deletions etc...is equivalent to resolve conflicts between "overlapped" rows. Since Appellant's definition of "range" as specified above is broad, Downing et al.'s teachings seem disclose all limitations required in the independent claim 19.

Argument 6: "Dependent claims 2-4, 6-9, 11-13, 15-18, and 20-21... Downing et al. does not disclose..."a refresh log comprising an epoch identifier", pages 15-16.

In response to the Appellants' above argument, Examiner disagrees. In the specification, page 16, lines 5-9, discloses "For example, the epoch number may be the timestamp taken during the table lock period in the beginning of the refresh or it may be any other ever-increasing number".

Downing discloses "... Accordingly, a refresh timestamp is maintained for each snapshot at the master site. The refresh timestamp for a snapshot indicates the time at which the snapshot was last released. Moreover, each entry in the master logs contains a field for a refresh timestamp, TIME$$. When the entry is first added to a

master log, a default value for the timestamp is placed in the TIME$$ field. When the entry is first used in a refresh operation, the default value is changed to reflect the time of the refresh operation" - col. 8, lines 45-63. Fig. 12 depicts exemplary snapshots and master log used to illustrate the operation of a fast refresh operation in which row #3 is logged as deleted from the old order_line snapshot and row #8 is logged as inserted into the new order_line snapshot. Each snapshot has a different range of rows which also has an overlapped row #6. Order_line log contains changes to reconcile the differences between these snapshots and the master table: order_line thus, the master log can contain overlapped changes of rows; the overlapped or conflicts between modified rows can happen as described below.

As cited in col. 17, line 45 to col. 18, line 15, Downing discloses "it is possible that not all of the modifications to the snapshot resulted in entries in the master logs due, for example, to the way a conflict was resolved with asynchronous replication... purges all log entries from the master log older than the timestamp of next most recently refreshed snapshot. The refresh time for the current refreshing snapshot is updated a the master site...the union can filter out duplicate insertions or deletions..." Therefore, resolving conflicts in the master log regarding duplicate insertion/deletions etc...is equivalent to resolve conflicts between "overlapped" rows. Since Appellant's definition of "range" as specified above is broad, Downing et al.'s teachings seem disclose all limitations required in the independent claim 19. Because the definitions of limitations "range" and "epoch identifier" in the specification are broad as shown above, the cited prior art seem discloses limitations in the dependent claims.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/LINH BLACK/

Examiner, Art Unit 2159

Conferees:

James Trujillo

/James Trujillo/

Supervisory Patent Examiner, Art Unit 2159

Eddie Lee

/Eddie C. Lee/

Supervisory Patent Examiner, TC 2100

Thomas, Kayden, Horstemeyer & Risley, L.L.P.

600 Galleria Parkway, SE
Suite 1500
Atlanta, Georgia 30339-5948
Tel: (770) 993-9500

Fax: (770) 951-0933